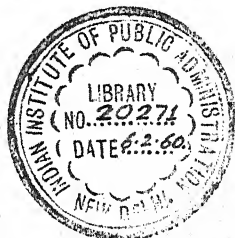


**THE INSTITUTE OF CHARTERED ACCOUNTANTS  
IN ENGLAND AND WALES**

# **MECHANISED ACCOUNTING AND THE AUDITOR**



**Report of the  
MECHANISED ACCOUNTING  
SUB-COMMITTEE  
of the  
Taxation and Financial  
Relations Committee**

**MOORGATE PLACE  
LONDON, E.C.2  
March, 1949**

## CONTENTS

	<i>Page</i>
FOREWORD . . . . .	5
I INTRODUCTION . . . . .	7
II THE BASIS OF MECHANISATION:	
Principles . . . . .	10
Expense considerations . . . . .	12
Organisation . . . . .	12
Effects of mechanisation . . . . .	13
III GENERAL AUDIT CONSIDERATIONS:	
Interests of management and auditor . . . . .	15
Internal check and control . . . . .	16
Fraud . . . . .	18
Knowledge of the accounting system . . . . .	19
Development of auditing technique . . . . .	20
IV SPECIFIC AUDIT DIFFICULTIES:	
Absence of primary records . . . . .	21
Cross-references . . . . .	24
Code numbers . . . . .	25
Composition of ledger balances . . . . .	26
Absence of ledger records . . . . .	27
Misuse of accounting terms . . . . .	28
Incorrect allocations . . . . .	29
Conclusion . . . . .	30

70

82

812

## FOREWORD

by

B. H. BINDER, F.C.A.

*President of the Institute*

When the Council of the Institute, with the approval of members in general meeting, established the T. & F. R. Committee in 1942, few members could have foreseen the extent to which the committee's efforts would enrich the literature of the accountancy profession in the short space of a few years. Much of the committee's work has been concerned with the compilation of memoranda leading to the issue of statements carrying the authority of the Council. Perhaps the best-known and most important of these statements are the recommendations on accounting principles; but the T. & F. R. Committee has also taken no small part in the preparation of many Council memoranda on taxation and in the detailed consideration of company legislation which last year made possible the issue of the booklet on the Companies Act, 1947.

The present report, for which I am pleased to write this foreword, is in an entirely different category. It is issued in the name of the Mechanised Accounting Sub-committee of the T. & F. R. Committee and the opinions expressed may not necessarily be those of the Council of the Institute. In this respect it resembles the report on *Developments in Cost Accounting*, published in 1947 in the name of the Cost Accounting Sub-committee. Both reports deal with matters on which it would not be appropriate for the Council to attempt to issue any statement comparable with its recommendations on accounting principles. Nevertheless I regard the present report on *Mechanised Accounting and the Auditor* as being a work of importance and considerable value from which all members of the Institute—and many others—should benefit.

Mechanised accounting presents ample material for a number of text-books; the subject is complicated by the existence not only of many different makes of equipment but also of two basically different types—keyboard machines and punched-card machines. The sub-committee has made no attempt to compile a text-book, nor does its report mention the names of any makers of equipment. What has been achieved is the presentation, as concisely as possible and in a readable form, of a statement of the main causes of the difficulties which may be experienced during the audit of accounts kept by a mechanised system.

Apart from the diversity of the available mechanical equipment, almost every system has features peculiar to the particular busi-

ness and it is therefore by no means easy to make a general statement of audit difficulties. Moreover, the extent to which a system may have been installed without full consideration of all aspects, or may be inefficiently supervised and controlled, varies so greatly from business to business that it might appear wellnigh impossible to generalise. The sub-committee is therefore to be congratulated on having effectively searched the tangled mass of detail and exposed the underlying causes of the auditor's difficulties, thereby making it possible to summarise the principal causes under no more than seven main heads.

The report is intended primarily for practising members of the Institute, but it is my earnest hope that it will be read by all members, by their staffs and by all who may be concerned with the installation or operation of mechanised systems. I share the sub-committee's view that consultation with the auditor, at the earliest stage of mechanisation, will usually be to the advantage of both the business and the auditor and the appreciation of each other's difficulties will assist in their solution. To this end the sub-committee has itself made a timely and invaluable contribution for which I am pleased to record the appreciation of the Council. Mr. W. ROBINSON, A.C.A., (Chairman) and Mr. H. O. H. COULSON, F.C.A., undertook the major burden of the drafting for the sub-committee, assisted by Mr. F. M. WILKINSON, A.C.A., as secretary.

Although the report has not been prepared for students, I feel sure that articled clerks who have passed the intermediate stage in their training will derive from it considerable benefit. Whilst its length will not impose any great additional burden of reading, the contents should enable them to understand more readily and fully what they experience in the course of their practical training. I think it is no exaggeration to say that the sub-committee, by avoiding non-essential detail, has in one report rendered a much-needed service to senior students for whom a thorough understanding of basic principles is essential, to many practitioners who are now coming into more frequent contact with mechanised methods and to those who have made a special study of such methods and for whom a report of this kind will provide a useful background against which to view their own experience.

B. H. BINDER.

*March, 1949*

## I. INTRODUCTION

This report is the result of an enquiry conducted by a sub-committee of the T. & F. R. Committee, under the following terms of reference from the Council of the Institute:

(1)

*To consider whether, in the organisation of mechanised accounting systems, there are any widespread practices which have given rise to audit difficulties and, if so, how those difficulties can be removed or alleviated.*

Those terms do not imply an attempt to devise a standard system or systems of mechanised accounting which would ease the auditor's work, or to frame the accounting system for the auditor's convenience. Mechanised methods are used in a wide variety of businesses of which the accounting requirements cannot be standardised; but even if they could, it is fundamental to auditing that the audit procedure must be conditioned by the records. The auditor may not find the accounting records (mechanised or otherwise) always in the form most convenient to him, but it would be unreasonable to expect changes to be made for his benefit only, at the cost of serious inconvenience to his client.

There are, however, features of mechanised accounting that present difficulties to the auditor. The sub-committee therefore sought, from the regional T. & F. R. committees of the district societies of chartered accountants, information as to the principal types of difficulty which have been encountered in practice. In reviewing the information received and the wide experience of the members of the sub-committee, it has been borne in mind that, subject to any statutory requirements, the form of accounting record to be maintained is primarily a matter for the decision of management and is dictated by the needs of the business. A modification for the benefit of the auditor, however, does not in itself imply inconvenience to the business and its effect may well be to improve the efficiency of the system.

(2)

Mechanisation represents no more than a change in the means by which records are prepared, the ultimate records themselves remaining in principle unchanged. It substitutes mechanical computation and typewritten impressions for mental calculation and hand-written entries. Although in form the records may appear greatly different in many respects, even the form may not be dissimilar to loose-leaf records compiled by 'short-cut' manual methods. It is not uncommon for difficulties to be attributed to mechanisation when in fact they arise solely from the use of 'short-cut' methods and would exist—probably in more serious form—even if the carrying out of those methods were done by hand instead of by machines.

(3)

- (4) It is desirable therefore to emphasise that this report is concerned with mechanised accounting and not with the much wider question of modern developments in accounting methods. For many years it has been the practice to introduce 'short-cut' methods in book-keeping procedure which result in the partial or total abandonment of day books, ledgers and other records at one time regarded as essential books of prime and secondary entry. Such methods are continually being developed. They arise from the growth in size of businesses, the consequent need to train staff to specialise in a limited sphere of office duty and the vital need for up-to-date information which could not otherwise be produced at the time required; they are made possible by developments in the design of filing equipment and office stationery and in methods of taking carbon or other copies of original documents. Examples of 'short-cut' methods adopted on an extensive scale are the use of inward invoices as posting media without entry in a purchase journal; the use of copy sales invoices as posting media without entry in a sales journal; and the use of filed invoices or copy invoices instead of personal ledger accounts. Developments of this kind are not the subject of this report, but the consequent difficulties experienced in auditing are often similar to those arising from mechanisation.
- (5) Mechanised methods of accounting were developed and used in this country long before the 1939-45 war. During the war the advantages, and in some cases necessity, of mechanisation were emphasised wherever the production of accounting information by manual methods would have required man-power which could not be spared, or where the time factor made it impossible to wait for manual processes to be completed. In consequence, the use of machines was extended, although this development was confined largely to businesses engaged on essential war work and to government offices. Severe limitations on the supply of office machinery and of labour for maintenance have prevented a wider development in industry and commerce generally, but there is no doubt that the development will proceed in future as conditions of supply permit.
- (6) Although this report is intended primarily for practising members of the Institute, members holding appointments in industry and commerce will be expected to advise on the installation of mechanised systems and the types of machines best suited to the problems of their particular businesses; they will, presumably, also take part in the operation of the system installed. All members, whether in practice or industry, should therefore possess a good working knowledge of the principles on which mechanised systems are operated, the purposes they serve, the types of machines available and the office routine. Probably the

most difficult problem of any installation is the initial selection of the machines most appropriate to the immediate and possible future requirements of the particular business; the accountant of that business should be the person best able to decide, but it is desirable that in making the decision due regard should be had to the audit requirements. Consultation with the auditor at the earliest stage will usually be to the advantage of both the business and the auditor and the appreciation of each other's difficulties will assist in their solution.

The practising member's intimate knowledge of his client's existing system, together with his experience of other businesses, should enable him to offer valuable guidance on the installation of a mechanised system whilst at the same time safeguarding his own audit requirements. Such guidance can be given only from a sound knowledge of mechanised accounting and by viewing the audit difficulties in their proper perspective. It has therefore been thought desirable, before proceeding to the matters which directly concern the auditor, to submit a brief statement (section II) on the basis of mechanisation, covering the main considerations involved in deciding whether or not to introduce a mechanised system.

(7)



## II. THE BASIS OF MECHANISATION

### Principles

- (8) The use of machines for accounting is no different in principle from the use of machines in a factory. The objects are to reduce the man-power required and the time taken for a given process and to reduce the possibility of error; in other words, to increase efficiency. To achieve these objects machines tended by trained operators are used to carry out work which would otherwise require manual labour and mental exertion. Specialisation of function is developed extensively and emphasis is transferred from the skill of individual book-keepers to the control exercised over the feeding of material to machines and over their output. Ultimately, the purpose of accounting is to present information for the benefit of interested persons—whether shareholders, directors, managers or others—and for this purpose the personal skill of the accountant is essential. Mechanisation can be applied only to the accounting processes involved in preparing the material from which the final information can be presented. Accounting skill and effective control are vital.
- (9) In deciding whether or not to mechanise it is necessary to consider what are the products of the existing system, in the form of accounting documents and records for internal and external use, and to ask the following questions:
- (a) Are those products actually used or necessary and, if so, do they satisfactorily fulfil their purpose?
  - (b) Would other documents and information be of value and, if so, could they be obtained from the existing system?
  - (c) Is the existing system capable of producing the essential records and documents at the time when they are required and at reasonable cost?
  - (d) What are the possibilities of material variations in the load on the existing system and will that system enable substantial expansion of activity to be dealt with?
- If the answers to those questions are satisfactory, further consideration of mechanisation is unlikely to serve any useful purpose. If the answers indicate that an improvement may be possible it is then necessary to analyse the accounting operations of the business and to consider whether mechanisation could effect the improvement.
- (10) Accounting operations comprise four main processes carried out within a framework of accepted principles:
- (a) Recording transactions (for example, cash receipts and payments, purchases and sales).
  - (b) Adding and calculating.

- (c) Sorting or analysing, including ledger posting.
- (d) Reproducing records (for example, copying of documents, preparation of sales ledger statements, trial balance).

Machines are capable of carrying out all these processes, but it is not necessarily advantageous to use machines in all cases because, *inter alia*, it may not be possible to utilise time saved on manual operations in other profitable ways. Where the number of transactions is small, or where there are few entries of uniform type, mechanisation to any great extent is generally unsuitable. Mechanisation depends for its success on the grouping of transactions so that each group contains a large number of transactions requiring similar entries. Given a sufficiently large number of entries of uniform type, accounting processes can be mechanised extensively. Each process should be examined and divided into its component operations, involving a review of peak loads and the collation of different operations which may consist in part of similar accounting processes. Care is necessary to distinguish between transactions that are genuinely identical and those that are only superficially so and it should be borne in mind that abnormal items must usually be treated separately, probably by manual methods.

From an examination in the foregoing manner it will be possible to decide whether or not mechanisation would be beneficial. Frequently it is found that whilst mechanisation would be helpful in certain directions, it is unnecessary, or even undesirable, in others and an endeavour must be made to weigh impartially the advantages and disadvantages. Moreover, machines may be introduced for special purposes only, or for general convenience, without causing any major change in the accounting system. Examples of 'special purpose' machines are cash registers for use in shops, postal franking machines, cheque-writing machines, time-recording clocks (attendance and job) for use in connection with the payment and analysis of wages. Examples of 'general convenience' machines are calculating, adding and listing machines, some of which require trained operators while others can be operated easily without special training. Even in the smallest of businesses the use of one (or more) 'general' or 'special purpose' machine has come to be regarded almost as a normal part of the clerical arrangements. The resultant modifications in the accounting system call for no separate comment in this report. (11)

A mechanised system, as distinct from the use of machines for general convenience or for special purposes only, involves book-keeping or accounting machines. It is mechanisation in this sense with which this report is concerned. The various types of machines available must be considered in the light of the present (12)

and possible future requirements of the particular business. For some businesses, more particularly the larger organisations, a combination of different types may give the best results. For example:

*Keyboard machines* for purchases, sales invoicing, cash recording and personal accounts.

*Punched-cards* for analysing purchase invoices, sales invoices, stores requisitions and the preparation and analysis of the pay-roll.

*Manual methods* for the nominal and private ledgers.

The potential speed of the machines can be misleading unless the whole routine of the proposed system is taken into consideration, involving a careful estimate of the total time that will be required in operating the system. Such an estimate must have regard not only to the actual machine-time, but also the time in preparing prime documents for the machines, in pre-listing and recording for control purposes before putting the machines into operation and in carrying out the internal checks that it will be necessary to impose.

### **Expense considerations**

- (13) The question of cost affects not only the selection of system but also the final decision as to whether or not mechanisation is worth while. Usually the initial expense of installing machinery is heavy and the capacity of the machines must therefore be considered in relation to the amount of work to be done. Accounting machines, no less than factory machines, should operate as near as possible to capacity, which will require calculation having regard to question of cost and to all factors tending to reduce the theoretical total operational time. Mechanisation can achieve economies but the economies will be illusory if conditions are unsuitable for mechanisation or, although conditions are suitable, a system has been selected without due care. In general, it may be said that to justify itself mechanisation should either reduce substantially the cost incurred under the existing system or provide further information and statistics (which can really be utilised to advantage) without increasing that cost. Irrespective of cost, however, there may be circumstances in which mechanisation is imperative having regard to the volume of work and the time available.

### **Organisation**

- (14) A preliminary step essential to mechanisation, whether keyboard or punched-card, is the design of special stationery and filing systems without which the machines cannot be used. Mechanisation has therefore developed concurrently with progress in the design of loose-leaf records and multi-copy stationery

and the use of prime documents as posting media. Records of this kind are not confined to mechanised systems; indeed, many businesses have improved manual systems by such modern methods. Moreover, mechanical or quasi-mechanical aids are frequently used in conjunction with manual systems; for example, calculating or adding machines not forming an integral part of the accounting system itself and equipment to facilitate the sorting and alignment of documents. Although mechanised accounting proper is distinct from such methods and aids, it would be impossible without the ancillary devices of this kind on which it relies.

Every document to be used in the proposed system should be examined and re-drawn where necessary to facilitate each process. (15)  
Unnecessary complications and over-elaboration are to be discouraged; all documents should be as simple in design as possible and in such form as to give the greatest prominence to the items requiring to be extracted therefrom, for example information to be punched into cards or posted to a ledger account. Wherever possible, trial 'runs' of the system under the new documentation should be put into practice. If it is practicable to adapt a revised documentation to the existing system, a new system may with advantage be introduced by stages beginning with the revised documentation and proceeding stage by stage in the light of experience. Alternatively, if it is practicable, the new system, when fully planned and equipped, should be installed in parallel with the old, the latter being retained in whole or part until the new system has been found satisfactory.

No mechanised system should ever be introduced without a full and complete plan of all operations. Senior officials and supervisors should be called into conference to ensure that each understands the part his section will play in the whole system and that all difficulties foreseen by any of them are met. Unforeseen difficulties are almost inevitable, hence the need to provide for every circumstance that any of the personnel may foresee. (16)  
After installation, it remains important in the case of senior staff to encourage them to take an interest in the accounting operations as a whole and the place of their work in the entire scheme. For this purpose frequent accounting discussions and conferences are desirable and any revisions of procedure should be discussed and agreed with all the senior staff whose work is affected.

### **Effects of mechanisation**

A suitable mechanised accounting system, installed in appropriate circumstances and effectively controlled, may be expected (17)

to achieve the following main advantages over the existing manual methods:

- (a) The preparation of accounts and statistics more rapidly, more accurately and at less cost.
- (b) Greater control over the accounting system generally.
- (c) The elimination of much copying work.
- (d) More effective control of credit—for example, the compilation of statements at the same time as ledger accounts are posted, enables the statements to be rendered promptly (quite apart from the saving of clerical labour).
- (e) A reduction in the number of day books, resulting in further saving of clerical labour and the removal of possible sources of error.
- (f) The release of staff for more important work such as internal auditing and budgetary control.
- (g) The production, at little or no extra cost, of information and statistics not previously obtainable.
- (h) Greater flexibility in the event of a substantial expansion of activity.

- (18) It must not, however, be assumed that mechanisation is always justified or always desirable. There is a danger of using machines for tasks to which they are not properly suited and of insisting on the use of machines when manual methods, with little adaptation, could be made at least as satisfactory. There is a further danger that machines may be installed for purposes to which they are well suited but for which their use is not economical. A valuable test of any mechanised system is to compare it with a manual system in which quasi-mechanical aids are used fully where appropriate.

### III. GENERAL AUDIT CONSIDERATIONS

#### Interests of management and auditor

It has already been observed that mechanisation represents no more than a change in the means by which records are prepared, the ultimate records themselves remaining in principle unchanged. The auditor's objective is to report on the balance sheet and revenue account, so that fundamentally his audit procedure and requirements are unaffected by the mechanisation of the accounting system, but the practical routine of the audit may need extensive alteration. Audit procedure has to be modified where there has been a partial or complete abandonment of some accounting records without the introduction of a compensating additional record which may be necessary for audit purposes to fill the resultant gap. Perhaps one of the commonest features of this type, which calls for new audit methods, is the replacement of primary records, normally kept in day-book form, by systems of control which may or may not lend themselves readily to manual checking processes. (19)

Accounting records must furnish management with data essential for purposes of control and executive decision. They must also provide material from which clear and precise statements may be compiled to enable management to report effectively to the proprietors of a business. In so far as audit requirements may conflict with these purposes it is usually, if not invariably, the case that management requirements must prevail and the auditor must seek other methods, possibly more laborious, of achieving essential checks. On the other hand, the interests of management and audit are not necessarily in conflict, since many of the tests and controls which are vital to the audit are equally vital to the efficient conduct of the business. Much can be achieved by consultation between the client's accounting executive, the machine suppliers and the auditor, at the earliest stages in the formulation and introduction of a mechanised system. Such consultation should be regarded as an essential step before the introduction of any system. (20)

In many instances the records which the auditor may desire, in order to avoid laborious and time-wasting procedure, are capable of being produced without interfering with the principles of the system and with little or no inconvenience to the client. For example, information needed for audit files, such as lists of balances, can be produced easily by taking an additional copy during the normal balancing or other operation. Similarly, there is usually little difficulty in taking carbon-copy proof lists of ledger postings made by keyboard-type machines or, in the case (21)

of punched-card systems, in preparing a list or summary of the cards used for the posting operation. On some matters the auditor will see fit to request the regular preparation of a particular record as a normal part of the accounting system, but from time to time the assistance of the client's staff will be sought for audit purposes, for example in sorting documents or in preparing special lists or tabulations not required regularly. Where special assistance is sought in this way the auditor must exercise care in the timing and wording of his requests, otherwise the scope and nature of the proposed tests may be evident enough to facilitate irregularity. He must avoid deputing to the client's staff any discretion properly exercisable by the auditor and his own staff, for example in deciding upon the adequacy of supporting evidence submitted.

### **Internal check and control**

- (22) One of the major purposes of mechanisation is to canalise the accounting processes into well-controlled channels so that, provided the control is sound in principle and effectively applied, the channels themselves become unimportant. The introduction of a mechanised system therefore provides an opportunity for a complete examination of the safeguards required. The internal check imposed should form an integral part of the control system as a whole. For the auditor this aspect of mechanisation is the most important one. It enables emphasis to be placed on principle rather than detail. Audit checks should, more than ever, be directed to testing the principles of the accounting system (including the internal check) and its practical operation. If the principles are sound and applied effectively, the auditor will be able to dispense with a considerable amount of detailed routine checking. The soundness and efficiency of the control system are of much greater importance than the mechanical operation of the machine or the hole in a card. If it is established by means of test-checks that the control records do prove the arithmetical accuracy of the ledgers, then it becomes possible for the auditor to vouch, by means of code references, direct from prime documents to the ledgers instead of through the intermediary of a day book. Direct vouching in this way has distinct auditing advantages, particularly in vouching the private and nominal ledgers.

- (23) It will be evident from the preceding paragraph that the canalising of processes may often be as advantageous to the auditor as it is to the client. Suitable machines installed in consultation with the auditor and operated under the supervision of competent accountants will usually be sound in principle and of advantage in many ways to the auditor; such audit difficulties as



do arise are frequently capable of being met easily and promptly by minor modification of the system or by the preparation of special information from time to time. Because the fact of specialisation tends to subdivide clerical processes into recognised channels, the checking of records by means of sample tests is rendered more satisfactory by the comparative certainty that transactions recorded by the same processes will all have been treated alike and the treatment of the bulk will correspond entirely to the treatment of the sample. This result is rendered even more certain by the internal checks which usually are or can be carried out as part of the accounting system.

Any variations from prescribed procedure will require close study by the auditor so that their implications can be appreciated. Similarly, items which do not lend themselves to the normal routine and for which special arrangements have been laid down, will require more individual attention than the bulk processes. In this connection, the question of correcting errors may be noted. The correction of errors by operators can be dangerous and a recognised procedure for the purpose should be instituted and insisted upon. In general it will be found essential to forbid the correction of errors by the operators and to provide instead for the corrections to be dealt with through an adjustment journal, but if correction by operators is permitted it is essential that every corrected item must be verified immediately by a senior clerk or supervisor. (24)

Considerable emphasis has been laid in the three preceding paragraphs on the value of the control system and the internal check as means of enabling the auditor to be satisfied as to the detailed records without extensive detailed checking. It is, however, essential that the auditor should be satisfied that all 'balancing', 'proving' or 'control' systems are sound in principle. The control system must genuinely be independent and not merely serve to prove the machine against itself. For example, to ensure that all transactions have been included in a given process it is usually essential to supplement the machine control with some other control entirely independent of the machine and its operator. An independent control might take the form of a calculation (made from prime documents prior to the machine operation) of totals against which the machine totals can be checked—a procedure usually known as 'pre-listing'. (25)

Apart from arithmetical accuracy, which can be ensured by an effective system of controls, it is important to realise that balancing with the controls is not proof of the accuracy of the ledgers. It has always been one of the tasks of the auditor to detect errors of principle which do not affect the arithmetical accuracy and (26)



the auditor must examine carefully the possibility of errors of this kind in any mechanised system. Mis-postings are not only more easily made by the class of clerical staff employed in machine work, but the reduction of posting indications to code symbols tends to encourage error. There is also a danger—one of the most serious dangers in any mechanised system—of prime documents or punched-cards being miscoded and resulting in the transaction being guided from the start through the wrong channel, a type of error which may be difficult to locate. In general, it will be found that an internal check must be imposed in some form on all or most of the postings, particularly in regard to allocation, but to a large extent this can be achieved by breaking down the controls into suitable subsections, thus narrowing the risk of errors remaining undetected.

### **Fraud**

- (27) It is not infrequently suggested that one of the dangers of mechanisation is to increase the possibility of fraud. Although the sub-committee considers that fraud is not necessarily either facilitated or hindered by mechanisation, various safeguards against fraud may in fact accrue. Thus:

- (a) In a well-designed system attention will have been given to the whole question of internal check and control. Cases will arise, however, where over-enthusiasm for machine methods has led to the abandonment of normal safeguards; for example, it may happen in a small business that a 'general purpose' machine operated by one person is used to do work normally segregated to different persons. Any such weakness would be evident on first examination of the system of internal check, enabling immediate remedial steps to be taken.
- (b) The alteration of a machine record is more difficult than the alteration of hand-written entries. It would usually involve the operation of the appropriate machine and the production of records covering considerably more items than those in question; for example, to alter a machine record of cash received may involve the reproduction of at least one entire machine cash sheet.
- (c) An important feature of an efficient mechanised system is that emphasis is placed on the control and supervision of the two ends of the accounting process—the originating voucher and the final entry—relegating the intermediate processes to a mechanised routine. Fraud by the supervisors would normally involve collusion with machine operators, whilst machine operators could not perpetrate a fraud without a knowledge of and access to the whole system which they are unlikely to possess.

- (d) To perpetrate fraud on a large scale by fabricating all the records necessary to stand the tests of internal check and of the auditor would require knowledge of the operating mechanism of the machines to an extent that would be exceptional for persons of the seniority likely to attempt fraud of this kind.

On the other hand, the auditor must bear in mind that the avenues for fraud that are available under a manual system (particularly where loose-leaf records are in use) are in principle equally available under a mechanised system. The method of perpetrating the same fraud will, however, vary as between the two systems. The insertion of an incorrect total or carry-forward figure in a manual system would take the form, under a mechanised system, of manipulation of the machine; for example, a machine may be made to print a figure without adding it in the total, or to include in the total a figure not printed, or to add in an item which the printed record indicates is a subtraction. Similarly, the fabrication of a false document may be effected by inserting, in a carbon-copy record, a carbon-copy sheet which has every appearance of authenticity. In these and similar devices, however, the risks are only those which must be considered in every audit however the records may be kept. So far as the auditor is concerned, the important question is the soundness of the internal check in principle and the efficacy with which it is applied in practice. Scrutiny of vouchers and records and the follow-up of explanations of abnormal items remain the foundation of the audit procedure. (28)

### **Knowledge of the accounting system**

Before deciding upon his audit procedure in any particular case, it is essential that the auditor should acquaint himself fully with the principles underlying the system and with the procedure laid down for its operation. Staff instruction manuals, including operational charts, have much to commend them as a means of ensuring that the staff understand the principles of the system and the detailed operations for which each employee is responsible. Where no manuals have been compiled by the client the auditor will require exhaustive and detailed notes upon the system; in such cases a recommendation from the auditor for the compilation of appropriate manuals is desirable. It is important, however, that such manuals should be adhered to by the staff and should be kept up to date for any changes in procedure that may be found necessary in practice. A manual which cannot be relied upon as representing the current routine might prove more dangerous than useful to the client, although the auditor will usually be able to detect inaccuracies from his observation of the operation of the system. (29)

- (30) Whilst a detailed knowledge of the system is a pre-requisite to an effective audit, it is unnecessary for the auditor to probe into the mechanism of the machines themselves. The mechanical operation of machines is the concern of engineers. Auditors should concern themselves with the principles adopted for guiding transactions from originating documents through the mechanical processes to the ultimate record. In this connection punched-cards should be regarded as part of the mechanical equipment, so that the cards themselves should not be treated as records to be checked by auditors, even if the cards are 'interpreted' (the technical name applied where some of the information represented by holes in the cards has been translated by machines into figures and printed on the cards). The efficacy of an audit is not enhanced and may easily be prejudiced by an attempt to check punched-cards. An exception is the 'dual-purpose' card; that is to say, a card on which original information (for example an issue from stores) is recorded by hand and which is then punched from that information. In such a case the card is serving both as a prime document and as part of the mechanical process, but for the auditor a dual-purpose card should be regarded as having value only as a prime document.

#### **Development of auditing technique**

- (31) In the foregoing paragraphs an attempt has been made to outline the general considerations affecting an auditor in relation to a mechanised system. Clearly the development of mechanisation must be accompanied by a corresponding development of suitable auditing technique, based on knowledge of accounting machines and experience of systems met with by the practitioner during audits. Nothing can be lost by taking every opportunity of acquiring new knowledge of current developments, for example by observation in clients' offices or at business efficiency exhibitions and manufacturers' demonstrations, by studying brochures and catalogues of suppliers and by discussing machines with local representatives. Before proceeding in the next section to specific audit difficulties, one other general consideration may usefully be noted. Auditors should not ignore the possibility of facilitating their own work by the use of mechanical aids such as calculating or listing machines, including even those which require the use of a trained operator. Such aids will facilitate checking which otherwise might present considerable difficulty.

## IV. SPECIFIC AUDIT DIFFICULTIES

In the preceding section it has been observed that audit procedure requires modification where there has been a partial or complete abandonment of some accounting records without the introduction of a compensating additional record which may be necessary for audit purposes to fill the resultant gap. Situations have occurred, however, in which no modification of audit procedure would suffice to bridge the gap and the sub-committee has therefore directed its attention to the ascertainment and collation of broad particulars of such cases and to considerations of the means of overcoming or obviating the difficulties. The results of the sub-committee's enquiry are given in this section in which the principal types of difficulty have been summarised under seven main heads. Each head represents a primary divergence, between mechanised and manual accounting procedure, which gives rise to audit difficulties.

(32)

### Absence of primary records

The abandonment in whole or in part of day books and journals, in favour of the use of prime documents as direct posting media, is one of the commonest features of a mechanised system although in itself it is no more than a 'modern method' particularly suitable for adaptation to mechanisation. This aspect of mechanisation may present three main difficulties to the auditor:

(33)

- (a) The totals (for example of sales) which normally would be provided by the columns of a day book or journal may not be readily capable of verification. A similar position may arise in respect of the sub-totals normally provided by the analysis columns of a day book.
- (b) Documents used for two or more purposes (for example, sales invoices required for posting to personal accounts in the sales ledger and also for regional analyses or salesmen's commission) may have been re-sorted into the order required for a second process, thus presenting difficulty in vouching the totals for the first process.
- (c) Where the business involves a great number of transactions of the same kind, large blocks of them may be dealt with in one total so that it becomes impracticable to limit test-checks to manageable proportions.

### Remedies

In order to meet the foregoing difficulties it is suggested that the control of the accounting system should be tightened by a system of numbering prime documents and of breaking down the means of control to practicable proportions. This would normally be of no less benefit to the client than the auditor. The principal

(34)

features of control in this way are given below; they involve the introduction of new types of primary records in the form of invoice registers, 'batch' registers, summary books and similar records which are integrated with the double-entry system.

- (a) *Serial numbering of all prime documents in the order of first entry in the accounting records.* This ensures that a document is given a permanent identity immediately it takes its place in the records and thus makes possible adequate cross-referencing of prime documents to the various ultimate records; for example, if the ledger is being posted from original invoices the ledger account reference can easily be recorded on the invoice and the invoice reference number can be recorded in the ledger if the invoices have already been numbered. A decision as to what is the point of 'first entry' at which prime documents should be numbered will depend on the individual circumstances and is one of those matters which call for considerable skill in the design of an accounting system. The point at which a 'batch' of documents is prepared (as suggested below) may well be regarded as the 'first entry' in appropriate cases.
- (b) *Collection of prime documents, before first entry, into batches of suitable classification and manageable size (for example 50 or 100 copy sales invoices) and the serial numbering of the batches.* This not only facilitates the subsequent tracing of prime documents and enables them to be filed in accessible manner, but is also of vital importance in maintaining an adequate control over operations. Thus, by means of appropriately-designed batch cover-sheets the various stages through which a batch of documents passes can be recorded and each batch is sufficiently small to enable a close control to be imposed at every stage on the monetary amount it represents.
- (c) *Permanent filing of batches in batch-number order.* This is an essential conclusion to the handling of documents in batches as suggested in (b) above. To avoid risk of documents being lost through carelessness during subsequent reference and to facilitate the actual filing, it is advisable to secure each batch by wire stitching, stapling or similar permanent binding.
- (d) *Maintenance, as an integral part of the accounting system, of records of the batch totals of quantities, monetary amounts and any other information (including analyses) which has gone into the accounts from the documents comprising the batch.* These records are normally necessary for self-balancing procedures in mechanised systems and it would be difficult to over-estimate the importance of controlling by batches

as the most effective way of breaking down voluminous documents into quantities which can safely be handled at one operation and which facilitate audit procedures. A simple example will illustrate the value of a sound batching system. A business which has sold goods during a month to 20,000 customers may require to record those sales so as to ascertain:

- (i) the total sales;
- (ii) the totals for each type of article;
- (iii) the totals for each of twelve areas.

If the copy invoices are handled in 200 batches of 100 each, and the three types of analysis are made for each batch, then the batch record will not only provide the analysis totals required but will also enable other figures in the accounts to be verified (for example, those arising from posting to the personal ledger accounts of the 20,000 customers). If the auditor is satisfied that the system laid down is properly applied he can impose tests on selected batches in the knowledge that what he finds in those batches will be representative of the whole mass of sales records.

- (e) *Sectional balancing of ledgers on the basis of the batch records suggested in (d) above.* This is a logical development of the batch system and will normally be required for the client's own purposes of control. The principles of sectional balancing are well known and it will be evident that the most satisfactory way of achieving this form of control is to link the ledger sections with the batch records of prime documents.

Circumstances will arise in which the information required by the auditor, but not available because the client has dispensed with primary records, cannot be obtained from the normal accounting routine in the ways suggested above. Such cases may be due to the failure of the client to maintain an adequate control system, or to the desire of the auditor to impose an occasional test for which the material is not normally available. It then becomes necessary for the auditor to request the client to prepare special lists or analyses for audit purposes only. Where punched-cards are in use special operations of this kind can often be undertaken after a considerable period has elapsed since the cards were first used, but it will usually be desirable for the auditor to make his requests promptly while the transactions are being recorded; for example, his request may be for proof sheets showing all postings made to a particular ledger during the day, or for a machine list of all the items in a particular selection of batches normally recorded in total only. It is necessary for the auditor to be careful and tactful in making such

special requests, otherwise the object and scope of the proposed tests will be disclosed to the client's staff.

### Cross-references

- (36) Largely as a result of the direct posting system referred to under the previous heading, a possible source of considerable difficulty under a mechanised system may be the absence or inadequacy of cross-references between prime documents, primary records (day books or their equivalents) and secondary records (ledgers or their equivalents). The difficulties which can arise from this cause are mainly:

- (a) In the analysis of nominal accounts; for example, items in the ledger may have no direct reference to the prime documents, such as invoices, from which they originated, a position which might arise where the invoices are filed under suppliers, the nominal totals having first been ascertained by calculating machine.
- (b) In checking postings to personal accounts; for example, prime documents may be filed in batches without adequate references in the ledger to the batch numbers.
- (c) In checking totals; for example, a tabulation of sales compiled from copy invoices may contain no reference numbers enabling the tabulation to be checked with the prime documents since filed under, say, areas or salesmen.

- (37) So far as secondary records are concerned, in the majority of systems they will normally be arranged in code number or alphabetical order, so that reference forward from prime documents or primary records may cause little or no difficulty. It is in connection with reference back from the secondary records that difficulties frequently present themselves unless an adequate cross-reference system is in force. For the auditor this presents a serious position, since the tendency in modern auditing practice is to substantiate the final records by breaking them down, rather than proof by building-up. The use of code numbers instead of names and narrative may aggravate the audit difficulties. On the other hand, code numbers can facilitate cross-reference if properly used and if the points dealt with in paragraphs 39 to 41 are observed.

### Remedy

- (38) *The only remedy for the above-mentioned difficulties is to institute an adequate cross-reference system so that the prime documents which support the entries in primary and secondary records are identifiable with reasonable speed and with certainty. This course should be recommended by the auditor in the client's own interests.*



## Code numbers

Under any mechanised system, and inevitably with punched-cards, code numbers will be used on an extensive scale to replace the names and descriptions which would be used under a normal manual system. The X. Co. Ltd. becomes number 7619; cash received is described in that account by, say, the code number 4, discount by code number 5, goods supplied by various code numbers according to type of goods and so on for all items. Similarly, lists of purchases may have been prepared, classified under types of article, by sorting punched-cards under the code number appropriate to each type and tabulating accordingly. The machine list itself may reveal only the code numbers on which the cards were sorted. Moreover, a series of code numbers, say from 1 to 9, may be used on one column of a card for one series of items whilst another column, for an entirely different series of items, may also employ the numbers 1 to 9. In producing lists the machines themselves cannot show which particular column is involved on each list. (39)

For the auditor the use of code numbers for descriptions is a matter of particular difficulty because his client will not usually experience the same troubles. The client's staff is accustomed to the meaning of the various code numbers since they are in daily use; whereas the auditor (for whom each business is only a small part of his practice and who is usually in contact with a particular system at infrequent intervals only) cannot hope to recognise all the code numbers with which he is confronted. The difficulties confronting the auditor are mainly: (40)

- (a) In checking personal accounts and nominal accounts, there being no effective narrative explaining the nature of the individual items posted.
- (b) In analysing the content of nominal accounts where (as frequently happens) an account is not confined to items of an identical character.
- (c) In examining machine lists where the nature of the content of the lists is shown only by the code numbers; for example, sales may be listed under seven numbers representing types of goods but the machine list may show only the code number in each case.

## Remedies

Code numbers are to a great extent one of the difficulties which the auditor is obliged to accept. They are necessary or particularly convenient to his clients and particularly inconvenient to himself. The difficulties can, however, be eased in the following ways: (41)

- (a) *Lists of code numbers and their meanings should be furnished to the auditor for his own use.* In most cases such lists will



already exist for the clients' use; but if not their preparation for the auditor will benefit the client as well.

- (b) *Wherever practicable code numbers should be translated into narrative form in making entries in nominal accounts.* This will usually carry advantages for the client both in the preparation of periodical accounts or financial statements and in reference back to accounts over a period of years.
- (c) *Records for all standard transactions should be kept on specially designed stationery.* Thus, machine lists of items can easily be printed on paper having printed headings over the various columns in which code numbers appear. Similarly, sales invoices and copies thereof can be designed so that particular items appear in particular spaces and explanations of code numbers appear on the document itself. Devices of this kind will be regarded as essential for the business itself in any well-installed mechanised system.

If the recommendations in paragraph 34 are adopted, the nature of the registers kept and the methods of filing documents will remove many of the auditor's difficulties in regard to code numbers in primary records.

### **Composition of ledger balances**

- (42) In all ledger accounts, but particularly in personal accounts, the absence of adequate correlation of debits and credits will cause considerable difficulty. If debit entries are not identified with the relative credit entries and vice versa, the current balance on an account may become incapable of analysis into the items of which it is composed, resulting in inability to prepare an accurate statement explaining the amount apparently outstanding. For the auditor the principal difficulties which arise are in connection with:

- (a) Examination of the system of credit control. The task is rendered doubly difficult because the absence of proper correlation may indicate an ineffective credit control system; from which it follows that consideration by the auditor of the risk of loss through bad and doubtful debts is a tedious and uncertain procedure.
- (b) Verification of debtor and creditor balances as representing sums genuinely due to or by the client. This necessarily involves not only the possibility of error but also that of manipulation.
- (c) Analyses of nominal accounts containing considerable transfers in and out.

- (43) Proper correlation is fundamental to any system of accounting (whether mechanised or not) and the absence of good ledger-

keeping has often been a cause of difficulty in a purely manual system. But with mechanisation its importance is emphasised by the extensive use of code numbers and symbols instead of narrative and by the absence of manual balancing. A clerk posting to a handwritten ledger is more likely to clear debits with credits as part of his posting process than is a machine operator whose ledger is mechanically balanced (whether or not the entries are in the correct account) and therefore liable to be accepted as in order.

#### Remedies

Fortunately for the auditor, the available remedies are of even greater value to the client than to the auditor. Accounts, particularly personal accounts, kept in a slovenly manner will never improve operating efficiency and may, in extreme cases, result in serious financial loss through inability to support a dispute in a court of law. There are two remedies which should be recommended strongly to clients: (44)

- (a) *Where practicable and desirable, items posted to an account should be marked with a code or symbol indicating the relevant item(s) on the other side.*
- (b) *The regular identification of the composition of outstanding balances should be part of the normal accounting system.*

In order to carry out the above suggestions special 'query' and 'credit control' staff should be employed, where the magnitude of the task warrants it, to keep the accounts under constant review. The need for this type of organisation is usually more apparent under a mechanised system because businesses dealing in large numbers of transactions are those most suitable for extensive mechanisation, whilst the reading of an account is rendered more difficult by the use of code numbers and of a running balance column. (45)

#### Absence of ledger records

It is the practice under some systems, not necessarily mechanised, to dispense with the traditional form of ledger account. This is done more frequently for purchases than for sales, payments to suppliers being authorised only on original invoices and precautions against duplicate payment being taken at the authorisation stage through the ordering system. In some cases no attempt is made to maintain records on a personal basis; in others a quasi-ledger is maintained in the form of filed documents. The auditor's difficulty lies in the verification of balances due to and from the client. (46)

### Remedies

- (47) The remedies available are again all as much in the interest of the client as of the auditor:
- (a) *The filing of original documents (or copies of documents sent out) as a quasi-ledger record in suitably designed binders or files.* Subsequent reference may become impossible if this is not done.
  - (b) *The maintenance of effective total accounts and other controls, rendering the individual items of secondary importance.* In this connection reference should be made to paragraph 34. Without an effective control system the discovery, tracing and correction of errors is difficult even with orthodox ledgers; it is virtually impossible where ledgers are abandoned.
  - (c) *The introduction of ledger accounts on orthodox principles where the complexity and value of the transactions are considerable.*

### Misuse of accounting terms

- (48) Some abuses of accounting terminology are found in practice in the operation of mechanised systems. It cannot be suggested that this gives serious difficulty to the experienced auditor, since he is concerned primarily with the principles of the system rather than the expressions used to describe the records and processes. For example:

- (a) The expression 'control account' is sometimes incorporated in the title of accounts which are not control accounts in the accepted sense of providing in total a counterpart to a number of individual accounts. 'Control' is freely used in mechanised systems to indicate records which do no more than prove the accuracy of a mechanical operation.
- (b) The expression 'Dr.' and 'Cr.' are often applied to items or balances which under orthodox methods would be described by 'Cr.' or 'Dr.' respectively. This position arises because mechanisation is operated not on a 'debit and credit' basis but on a 'positive and negative' basis. A machine will frequently be operated without printing either 'Dr.' or 'Cr.' for the positive items (for example the debit balances in a list of sales ledger balances) but for the negative items (credit balances on the sales ledger) the machine may print 'Dr.' against those items if the use of that particular symbol is the easiest way of indicating the negative. It is obviously advantageous to run a machine in such a way that the normal items can be dealt with as positive, leaving only the exceptions to be distinguished as negative, even though in many instances this may result in credit items being described as 'Dr.'

### Remedy

Much can be achieved through consultation with auditors when a mechanised system is installed, but no real remedy exists. Any unnecessary misuse of accounting terms may be remedied by appropriate recommendations from the auditor, but in general this question will gradually cease to have any practical importance as the use of mechanisation is extended and its peculiarities become commonplace or are overcome. The misuse of terms which now exists serves mainly to emphasise the importance to the auditor of a detailed explanation of the whole system and routine adopted by a particular client. (49)

### Incorrect allocations

As indicated earlier, successful mechanisation depends on the grouping of transactions so that each group contains a large number of transactions requiring similar entries. Unfortunately it is found in practice that over-enthusiasm for the use of machines may result in their being used for tasks to which they are not really suited. This gives rise to a tendency to classify together transactions of fundamentally diverse types. A similar tendency results from inexperienced or incompetent supervision of the operation of a system that is sound in principle. For the auditor the serious difficulty, where large numbers of transactions are involved, is the risk of failure to detect incorrect allocations of material amounts resulting in improper description in the balance sheet and revenue account. (50)

### Remedies

To minimise the possibility of incorrect allocations attention should be directed to the two main principles involved: (51)

- (a) *Some transactions are not suited to mechanisation and they should be segregated and dealt with separately by manual methods rather than be forced into the system operated for the general run of normal transactions.* To attempt to force unsuitable items through by some deviation from the normal mechanical routine is undesirable and productive of error.
- (b) *An adequate and effectively supervised system of classification and coding of prime documents is essential.* Whilst mechanisation provides a speedy and accurate method of passing transactions through the appropriate channels, it requires the highest degree of control over documents before the mechanical process is put into motion.

Where necessary the auditor should recommend to his client the adoption of any changes which the audit shows to be desirable in these respects.

- (52) The auditor will in any event need to apply various tests, as a normal part of his audit, to enable him to judge whether or not material errors of allocation are likely to exist. These tests lie mainly in the following directions:

- (a) Exhaustive vouching of selected blocks of entries with the supporting prime documents to determine that transactions dealt with in a common manner are genuinely of one class.
- (b) Exhaustive scrutiny of selected batches of prime documents to verify the coding.
- (c) Detailed vouching direct from the ledger to the supporting prime documents in the case of the more material nominal accounts and all accounts (such as capital expenditure and repairs) which may contain 'border-line' items.
- (d) Scrutiny of all special entries.

The extent of the tests required will (as in all audit tests) be determined by the auditor's own opinion of the efficacy of the system.

### **Conclusion**

- (53) It is thought that the foregoing comments provide a reasonably comprehensive summary of the principal audit difficulties arising in practice through the keeping of accounts by a mechanised system and that the suggested remedies will meet the great majority of cases. In general the sub-committee's conclusion is that all the difficulties referred to arise from two major causes:

- (a) *Deficiencies in the accounting system itself.* In the interests of the client these should be rectified in the ways suggested. In this connection the auditor will need to keep well in mind the provisions of Section 147 of the Companies Act, 1948, relating to the keeping of proper books of account, Section 436 relating to adequate precautions where entries are made in records other than bound books and paragraph 2 of the Ninth Schedule under which the auditors are required to report whether, in their opinion, proper books of account have been kept.
- (b) *Changes in accounting technique, which the auditor must accept as inevitable.* Difficulties arising from this source are in part capable of amelioration by changes in the system which do not inconvenience the client; but in the main they call for appropriate developments in auditing technique and training. Accounting has now reached the stage where the basic principles of universal application are in practice applied in highly specialised ways to suit the requirements of individual businesses. It follows that

every audit is likely to have its own special features making the work more onerous and calling for an almost encyclopaedic knowledge and the exercise of the greatest skill.

It is hoped that this report will provide a useful framework within which auditors can examine their problems and review their procedure in relation to mechanised systems. Apart from the main heads of difficulty dealt with in this section, there will always be other cases in which the needs of the client's organisation will add other complications to the auditor's work. These must be considered and dealt with on their merits, but it is thought that they will arise on few occasions only and will be capable of solution by sympathetic understanding and discussion between the auditor and his client. (54)

